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- Basic
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```
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1 Fast detection of communication patterns in distributed executions

Thomas Kunz, Michiel F. H. Seuren

November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research**Full text available: [pdf\(4.21 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

2 Experience Using Multiprocessor Systems—A Status Report

Anita K. Jones, Peter Schwarz

June 1980 **ACM Computing Surveys (CSUR)**, Volume 12 Issue 2Full text available: [pdf\(4.48 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**3 Continuous display using heterogeneous disk-subsystems**

Roger Zimmermann, Shahram Ghandeharizadeh

November 1997 **Proceedings of the fifth ACM international conference on Multimedia**Full text available: [pdf\(2.32 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: continuous media servers, continuous media storage systems, disk arrays, heterogeneous disk subsystems

4 RAID: high-performance, reliable secondary storage

Peter M. Chen, Edward K. Lee, Garth A. Gibson, Randy H. Katz, David A. Patterson

June 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 2Full text available: [pdf\(3.60 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Disk arrays were proposed in the 1980s as a way to use parallelism between multiple disks to improve aggregate I/O performance. Today they appear in the product lines of most major computer manufacturers. This article gives a comprehensive overview of disk arrays and provides a framework in which to organize current and future work. First, the article introduces disk technology and reviews the driving forces that have popularized disk arrays:

performance and reliability. It discusses the tw ...

Keywords: RAID, disk array, parallel I/O, redundancy, storage, striping

5 Hints for computer system design

Butler W. Lampson

October 1983 **ACM SIGOPS Operating Systems Review , Proceedings of the ninth ACM symposium on Operating systems principles**, Volume 17 Issue 5

Full text available:  pdf(1.73 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Experience with the design and implementation of a number of computer systems, and study of many other systems, has led to some general hints for system design which are described here. They are illustrated by a number of examples, ranging from hardware such as the Alto and the Dorado to applications programs such as Bravo and Star.

6 Starting a university microcomputer maintenance program

Roger N. Addelson, Don M. Wee

September 1986 **Proceedings of the 14th annual ACM SIGUCCS conference on User services: setting the direction**

Full text available:  pdf(2.73 MB)

Additional Information: [full citation](#), [citations](#), [index terms](#)

7 National id card: the next generation: The US/Mexico border crossing card (BCC): a case study in biometric, machine-readable id

Andrew Schulman

April 2002 **Proceedings of the 12th annual conference on Computers, freedom and privacy**

Full text available:  htm(187.31 KB)

Additional Information: [full citation](#), [index terms](#)

8 Columns: Risks to the public in computers and related systems

Peter G. Neumann

January 2001 **ACM SIGSOFT Software Engineering Notes**, Volume 26 Issue 1

Full text available:  pdf(3.24 MB)

Additional Information: [full citation](#)

9 Trace-driven memory simulation: a survey

Richard A. Uhlig, Trevor N. Mudge

June 1997 **ACM Computing Surveys (CSUR)**, Volume 29 Issue 2

Full text available:  pdf(636.11 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

As the gap between processor and memory speeds continues to widen, methods for evaluating memory system designs before they are implemented in hardware are becoming increasingly important. One such method, trace-driven memory simulation, has been the subject of intense interest among researchers and has, as a result, enjoyed rapid development and substantial improvements during the past decade. This article surveys and analyzes these developments by establishing criteria for evaluating trac ...

Keywords: TLBs, caches, memory management, memory simulation, trace-driven simulation

10 Estimating file access time of floppy disks

M. A. Pechura, J. D. Schoeffler

October 1983 **Communications of the ACM**, Volume 26 Issue 10

Small computers often use floppy disks for storage. Since such disks are significantly slower than hard disks, the response time of a given application program is due predominantly to the time required to access data in files. Access time is dependent on three factors: hardware (disk drive and interface), the operating system in use, and the patterns of file access of application programs. A simple-to-use method of predicting access times with good accuracy is presented. The method ...

11 Run-time adaptation in river

Remzi H. Arpacı-Dusseau

February 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 1

Full text available:  pdf(849.04 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present the design, implementation, and evaluation of run-time adaptation within the River dataflow programming environment. The goal of the River system is to provide adaptive mechanisms that allow database query-processing applications to cope with performance variations that are common in cluster platforms. We describe the system and its basic mechanisms, and carefully evaluate those mechanisms and their effectiveness. In our analysis, we answer four previously unanswered and important que ...

Keywords: Performance availability, clusters, parallel I/O, performance faults, robust performance, run-time adaptation

12 Retrospectives I: the early years in computer graphics at MIT, Lincoln Lab, and Harvard

J. Hurst, M. S. Mhone, N. H. Taylor, D. T. Ross, R. M. Fano

July 1989 **ACM SIGGRAPH Computer Graphics , ACM SIGGRAPH 89 Panel Proceedings**, Volume 23 Issue 5

Full text available:  pdf(3.88 MB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

I am Jan Hurst; welcome to Retrospectives. In early 1988, SIGGRAPH funded a project which was called Milestones, the History of Computer Graphics. We believed it was important to capture the early history since the graphics of tomorrow continues to build upon its past. We established goals, and one result was to begin a series of retrospectives which focus on specific aspects of the industry. Boston seemed like the perfect opportunity to focus on MIT, Lincoln Lab, and Harvard. I hope that you wil ...

13 An audio input-output computer system for medical information

Michael Otten, Scott I. Allen, Perry Plexico, William C. White

August 1969 **Proceedings of the 1969 24th national conference**

Full text available:  pdf(754.84 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

An experimental telephone-based input-output system, using low-cost audio response equipment, was implemented on a medium-sized real-time computer. This system enables update of audio vocabulary files from a remote telephone terminal, which is a major feature simplifying program and data base modification. Speech signals are processed with an analog-to-digital converter at the rate of 10,000 samples per second, compressed by a delta modulation program to one bit per sample, and stored on a ...

14 Architecture of the IBM system/370

Richard P. Case, Andris Padegs

January 1978 **Communications of the ACM**, Volume 21 Issue 1

Full text available:  pdf(2.78 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper discusses the design considerations for the architectural extensions that distinguish System/370 from System/360. It comments on some experiences with the original objectives for System/360 and on the efforts to achieve them, and it describes the reasons and objectives for extending the architecture. It covers virtual storage, program

control, data-manipulation instructions, timing facilities, multiprocessing, debugging and monitoring, error handling, and input/output operations. ...

Keywords: architecture, computer systems, error handling, instruction sets, virtual storage

15 Surrogate subsets: a free space management strategy for the index of a text retrieval system

F. J. Burkowski

December 1989 **Proceedings of the 13th annual international ACM SIGIR conference on Research and development in information retrieval**

Full text available:  pdf(1.44 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents a new data structure and an associated strategy to be utilized by indexing facilities for text retrieval systems. The paper starts by reviewing some of the goals that may be considered when designing such an index and continues with a small survey of various current strategies. It then presents an indexing strategy referred to as surrogate subsets discussing its appropriateness in the light of the specified goals. Various design issues and implementation details are disc ...

16 Principles of delay-sensitive multimedia data storage retrieval

Jim Gemmell, Stavros Christodoulakis

January 1992 **ACM Transactions on Information Systems (TOIS)**, Volume 10 Issue 1

Full text available:  pdf(2.31 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This paper establishes some fundamental principles for the retrieval and storage of delay-sensitive multimedia data. Delay-sensitive data include digital audio, animations, and video. Retrieval of these data types from secondary storage has to satisfy certain time constraints in order to be acceptable to the user. The presentation is based on digital audio in order to provide intuition to the reader, although the results are applicable to all delay-sensitive data. A theoretical framework is ...

Keywords: continuous media, delay-sensitive, real-time

17 Designing computer systems with MEMS-based storage

Steven W. Schlosser, John Linwood Griffin, David F. Nagle, Gregory R. Ganger

November 2000 **Proceedings of the ninth international conference on Architectural support for programming languages and operating systems**, Volume 34 , 28 Issue 5 , 5

Full text available:  pdf(439.06 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

For decades the RAM-to-disk memory hierarchy gap has plagued computer architects. An exciting new storage technology based on microelectromechanical systems (MEMS) is poised to fill a large portion of this performance gap, significantly reduce system power consumption, and enable many new applications. This paper explores the system-level implications of integrating MEMS-based storage into the memory hierarchy. Results show that standalone MEMS-based storage reduces I/O stall times by 4-74X over ...

18 Designing computer systems with MEMS-based storage

Steven W. Schlosser, John Linwood Griffin, David F. Nagle, Gregory R. Ganger

November 2000 **ACM SIGPLAN Notices**, Volume 35 Issue 11

Full text available:  pdf(439.06 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

For decades the RAM-to-disk memory hierarchy gap has plagued computer architects. An exciting new storage technology based on microelectromechanical systems (MEMS) is poised to fill a large portion of this performance gap, significantly reduce system power consumption, and enable many new applications. This paper explores the system-level implications of integrating MEMS-based storage into the memory hierarchy. Results show

that standalone MEMS-based storage reduces I/O stall times by 4--74X ove ...

19 MEMS-based integrated-circuit mass-storage systems

L. Richard Carley, Gregory R. Ganger, David F. Nagle

November 2000 **Communications of the ACM**, Volume 43 Issue 11

Full text available:  pdf(577.78 KB)

 html(41.51 KB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)



20 Efficient (stack) algorithms for analysis of write-back and sector memories

James G. Thompson, Alan Jay Smith

January 1989 **ACM Transactions on Computer Systems (TOCS)**, Volume 7 Issue 1

Full text available:  pdf(2.93 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

For the class of replacement algorithms known as stack algorithms, existing analysis techniques permit the computation of memory miss ratios for all memory sizes simultaneously in one pass over a memory reference string. We extend the class of computations possible by this methodology in two ways. First, we show how to compute the effects of copy-backs in write-back caches. The key observation here is that a given block is clean for all memory sizes less than or equal to C ...

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